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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,809	01/29/2001	Glenn G. Amatucci	APP 1372-US	7825

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EXAMINER	
MERCADO, JULIAN A	
ART UNIT	PAPER NUMBER
1745	5

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/771,809	Applicant(s) AMATUCCI, GLENN G.	
	Examiner Julian Mercado	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) *1-7* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *8-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Remarks

This Office Action is responsive to Applicant's amendment filed August 20, 2002.

This application contains claims 1-7 drawn to an invention nonelected with traverse in Paper No. 3 (Office Action sent May 15, 2002). A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claims 1-7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

The rejection of claim 9 under 35 U.S.C. 102(b) based on Exnar et al. has been withdrawn in view of Applicant's amendment. Arguments with respect thereto are deemed moot.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Peramunage et al.

The rejection is maintained for the reasons of record and for the additional reasons to follow in response to Applicant's salient arguments.

Applicant submits that based on Peramunage's "Title, Abstract, Introduction etc." the $Li_4Ti_5O_{12}$ disclosed in Peramunage is "micron-sized", allegedly unlike the presently claimed nanostructure particulate lithium titanate intercalation compound. However, it appears to the examiner that "micron-sized" (within the context of this term as used in the Title, Abstract and Introduction of Peramunage's disclosure) is merely an understatement of the lithium titanate compound's dimensions which are maintained to be in the order of submicron-sized particles. In the previous Office Action the examiner had cited p. 2610, 1st full paragraph of the 2nd column in support thereof. This paragraph, as stated in its very first sentence, is in reference to "Figure 3a and b display[ing] the scanning electron micrographs of the two $Li_4Ti_5O_{12}$ products." In reference to this paragraph, Applicant submits that it is the precursor materials TiO_2 and Li_2CO_3, and not the $Li_4Ti_5O_{12}$ product *per se*, that has the "submicron dimensions". While the examiner concedes that the starting materials clearly are of submicron dimension, a further reading of the same paragraph indicates that the product, i.e. the $Li_4Ti_5O_{12}$ product obtained from TiO_2 and Li_2CO_3 "appears to have even finer particles and smaller agglomerates". (see last line of paragraph) Applicant appears to submit that in reference to the last line as cited above, Peramunage is actually stating that the $Li_4Ti_5O_{12}$ product *obtained using Li_2CO_3/TiO_2 precursor materials* appears to have even finer particles and smaller agglomerates *as compared to the $Li_4Ti_5O_{12}$ product obtained using LiOH/ TiO_2 precursor materials*, [emphasis added by the examiner], that is, the clause "even finer particles" is a relative comparison between the two products with the product formed with Li_2CO_3/TiO_2 seemingly having finer and smaller dimensions that the product formed with LiOH/ TiO_2. However, that the dimensions of the two products are compared with one having finer and smaller dimensions than the other, it is asserted

that both products synthesized by either LiOH/ TiO_2 or Li_2CO_3/TiO_2 precursor materials are both disclosed of submicron dimension, with the latter product having "even finer particles and smaller agglomerates" of *sub-micron dimension.* [emphasis added by the examiner] In this regard, Peramunage states that the latter product of Li_2CO_3/TiO_2 precursor materials is formed "without a significant growth in the particle size of the product". (p. 2610, 1st full paragraph of the 2nd column) By this teaching, the examiner maintains that the formed $Li_4Ti_5O_{12}$ product maintains the sub-micron dimensions of its precursor materials and thus teaches or at least suggests a nanostructure lithium titanate compound.

Applicant submits that a "submicron dimension" in itself fails to disclose the nanostructure dimension of the present invention, as submicron particles can be nearly an order of magnitude larger than those of nanostructure. This is not persuasive, however, as this reasoning is of limited scope since such a submicron particle that is an order of magnitude larger than that of a nanostructure appears to the examiner to be more appropriately referenced in terms of micron units. For the reasons discussed above, Peramunage is maintained to teach or at least suggest sub-micron dimensions of a lithium titanate compound. The examiner notes, however, that the scope of the present claims when interpreted in its broadest sense does not requisitely preclude micron sized particles. For example, such particles can be expressed in terms of nanometer units, e.g. 1 micron = 1000 nm.

Of note and in apparent support of the examiner's position, Applicant's disclosure on page 3 line 21-22 discusses the "submicron particles of $Li_4Ti_5O_{12}$" as disclosed by Peramunage.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Peramunage.

This rejection is set forth in view of Applicant's amendment now reciting that the particulate lithium titanate intercalation compound is one of "nanostructure" dimension. Peramunage is maintained to teach a particulate lithium titanate intercalation compound and more specifically one having submicron or nanometer dimensions. In this regard and in view of the examiner's response to Applicant's arguments above, the prior art product as now claimed appears to be the same or at most only slightly different from the claimed product.

Applicant submits that the examiner's dismissal of the process limitations is improper, since product-by-process claims have long been recognized as permissible to define the invention. In reply, the examiner maintains that the *method* limitations drawn to providing a mixture, heating said mixture, holding said mixture at a specified annealing temperature, and cooling the resulting particles do not further limit or give breadth and scope to the *product* claim. [emphasis added] As the prior art product disclosed in Peramunage appears to be the same or only slightly different from the claimed product, in the event any differences can be shown between the claimed product and that of Peramunage, such differences would have been obvious

to the skilled artisan as a routine modification in the absence of a showing of unexpected results. Applicant is invited to prove that such an unobvious difference exists.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. 5,872,074 to Schultz et al. is cited to teach preparation of a nanocrystalline material by mechanical grinding.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (703) 305-0511. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the

organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Miam
November 13, 2002